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Description

BACKGROUND OF THE INVENTION

Column units of the type described hereinafter are frequently used as chair columns. They have to fulfill the function of allowing height adjustment of a seat face and rotation of the seat face with respect to a base frame.

STATEMENT OF THE PRIOR ART

From German Patent 19 31 012 -upon which the prior art parts of independent claims 1 and 28 are based - and US-PS 4,848,524 chair columns are known. These chair columns comprise a base tube connectable with a base frame, which base frame is provided with rollers rolling on a floor. A gas spring is provided within the base tube. The gas spring comprises a cylinder and a piston rod. The piston rod is provided with a piston within the cylinder. The cylinder is filled with a pressurized gas on both sides of the piston . A bypass interconnects the chambers within the cylinder on both sides of the piston. A locking valve is allocated to the bypass. When the locking valve is open, the piston rod is pushed out of the cylinder by the pressurized gas acting onto the cross-section of the piston rod. By an axial load, the piston rod can be pushed inwards of the cylinder against the pressure of the pressurized gas acting onto the cross-sectional area of the piston rod. By closing the locking valve, the relative position of the cylinder and the piston rod can be locked in any desired relative position. The piston rod is supported on a base plate of the stand tube by an axial load transmitting ball bearing, such as to be rotatable with respect to the stand tube. The cylinder of the gas spring is guided within a guide sleeve inserted into the upper end of the stand tube. The cylinder is slidable and rotatable with respect to the guide sleeve. The upper end of the cylinder is provided with a conical fastening section. A seat carrier having a complementary conical hole can be fixed on this conical fastening section. A locking control pin extends through the upper end of the cylinder for opening and closing the bypass.

The lower end of the piston rod is laterally movable with respect to the base plate. In order to warrant a satisfactory guiding function, between the cylinder and the stand tube, a limited upward movement of the cylinder with respect to the base plate is allowed, such that the stroke of height adjustment is limited.

From European Patent 133 524 a further similar construction is known, in which the cylinder is enclosed by a housing, and the housing is provided with the conical fastening section.

From German Patent 15 29 723 a further chair column is known. A base tube is again fastened to a chair base. An inner telescopic tube is guided within the stand tube. The inner telescopic tube is closed at its upper end, and a seat plate is fastened to the closed upper end. A gas spring is housed within the base tube and the telescopic tube. The cylinder of the gas spring is rigidly fastened by its bottom to a bottom wall of the stand tube. The piston rod of the gas spring carries at its upper end a rope pulley. A rope is guided from the base plate of the stand tube around this pulley to the lower end of the inner telescopic tube. Locking means are provided for locking the movement of the telescopic innertube with respect to the stand tube. The cylinder, the piston rod and the pulley have no lateral engagement with the telescopic tube. On upward movement of the piston rod with respect to the cylinder, the pulley is lifted and the inner telescopic tube is also lifted. The lifting velocity of the inner telescopic tube is greater than the lifting velocity of the piston rod. Such, the stroke of the inner telescopic tube is larger than the stroke of the piston rod. Rotation of the seat plate with respect to the seat base is limited if possible at all. The provision of a locking control element at the upper end of the gas spring is impossible due to the presence of the rope pulley.

OBJECT OF THE INVENTION

It is an object of the present invention to provide a column unit which allows an increasedheight adjustment stroke while maintaining a perfect guiding function even in the position of maximum stroke. A further object of the invention is to allow a perfect rotation of a seat member or the like with respect to the base tube. A further object of the invention is to provide a column unit which allows a locking element to be provided at the upper end of the column unit.

A further object of the invention is to provide a simple and operationally reliable and compact design.

SUMMARY OF THE INVENTION

A column unit comprises a base tube having a base tube axis, a first base tube end and a second base tube end. Guiding means are inserted into the base tube adjacent the second base tube end. A positioning device having a device axis substantially coinciding with the base tube axis is accommodated within the base tube. This positioning device has a first device component unit and a second device component unit. The first and the second device component units are axially mov-

able with respect to each other and are substantially lockable with respect to each other in a plurality of relative axial positions. The first device component unit is axially supported by device support means and rotatable with respect thereto. The second device component unit extends beyond the second base tube end and the guiding means. An outer portion of the second device component unit extends beyond the second base tube end and the guiding means and is adapted for connection with a column-guided part. The second device component unit is in axially sliding guiding engagement with the guiding means.

The guiding means are axially slidingly guided along the base tube with respect to the second base tube end in response to relative axial movement of the first and second device component units, such as to be moved axially outwards of the base tube with respect to the second base tube end in response to axially outward movement of the second device component unit out of the base tube with respect to the second base tube end, and to be axially moved inwards into the base tube with respect to the second base tube end in response to axially inward movement of the second device component unit into the base tube with respect to the second base tube end.

With such a column unit, the maximum stroke of the positioning device can be increased without deteriorating the guiding function between the stand tube and the second device component unit, because the guiding means follow the axial movement of the second device component unit.

According to a most simple and economic design, the guiding means are entrainable with the second device component unit in at least one axial direction of movement by frictional engagement of the second device component unit and the guiding means, or the guiding means are entrainable by the second device component unit in at least one axial direction by abutment means. Moreover gravity forces may be used for moving the guiding means in downward direction.

A most reliable design is obtained, if the guiding means are entrainable by the second device component unit in both axial directions through respective abutment means, said respective abutment means permitting axially relative movement of the second device component unit and the guiding means.

E. g., the second device component unit may be provided with a first abutment ring, which is accommodated within a radial inner annular recess of a guiding sleeve. This annular recess has a substantially axially directed end face. The first abutment ring is engageable with this end face for entraining the guiding sleeve in a direction outwards of the base tube with respect to the second end of the base tube.

The second device component unit may be provided with a second abutment member engageable with the guiding means for entraining said guiding means inwards of the base tube with respect to the second base tube end. This second abutment member may be provided by a column-guided part, e. g. a chair plate, fastened to the second device component unit.

The guiding means may be centered within the base tube by a centering tube. The centering tube may be fixed against rotation about the base tube axis with respect to the base tube.

The guiding means may be fixed against rotation with respect to the base tube.

The base tube may be provided with a stop face limiting inward movement of the guiding means inwards of the base tube.

The guiding means may be at least partially made of a plastics material, e. g. in the form of a guiding sleeve.

The device support means may be provided inside the base tube.

The second device component unit may be provided at an axial end thereof remote from the device support means with locking control means.

The device support means may be axially fixed with respect to the base tube. This is particularly true for those possible embodiments of the invention in which the guiding means are moved by the second device component unit through friction means or abutment means.

Alternatively, the device support means may be axially movable with respect to the base tube. More particularly, the device support means may be axially movable with respect to the base tube in response to relative axial movement of the first and the second device component units.

The axial movement of the device support means may be controlled in response to relative axial movement of the first and second device component units through tackle means. By tackle means one has to understand a combination of at least one flexible tension member and a pulley.

The device support means may be movable with respect to the base tube against elastic resistance in response to axial load on the positioning device. Such, a certain spring effect of a seat plate may be obtained.

A very simple and reliable embodiment with axially movable device support means may be obtained, if the axial movement of the device support means is controlled in response to relative axial movement of the first and the second device component units by at least one flexible tension member running from a first anchoring point of the second device component unit via at least one pulley mounted on the device support means to-

wards a second anchoring point on the base tube, said guiding means being axially movable together with said device support means. In such an embodiment, the outward movement of the second device component unit with respect to the base tube corresponds to 1.5 times the extension movement of the positioning device, whereas the outward movement of the guiding means corresponds to 0.5 times the extension movement of the positioning device.

In order to allow rotation of an object guided by the column unit, the positioning device may be rotatable about the base tube axis with respect to the device support means and with respect to the tackle means. More particularly, the first anchoring point may be rotatable with respect to the second device component unit about the base tube axis.

A plurality of flexible tension members may be provided. It is also possible that a common tension member follows a plurality of paths between said second device component unit, said device support means and said base tube.

The tackle means may comprise at least one elastically stretchable, flexible tension member. So, the device support means are movable in response to axial load against elastic resistance. A similar effect may be obtained in that the tackle means comprise a flexible tension member having at least one end axially fixed to an elastically displaceable anchoring point.

The positioning device may comprise a cylinder piston device and more particularly a gas spring having a piston rod member and a cylinder member. In such case, the first device component unit may comprise the piston rod member, and the second device component unit may comprise the cylinder member. Alternatively, the first device component unit may comprise the cylinder member, and the second device component unit may comprise a guide tube axially fixed with respect to the piston rod member and guided within the guiding means.

According to a further aspect of the invention, a column unit comprises a base tube having a base tube axis, a first base tube end and a second base tube end. A positioning device having a device axis substantially coinciding with the base tube axis is inserted into the base tube. This positioning device has a first device component unit and a second device component unit. Said first and said second device component units are axially movable with respect to each other and are substantially lockable with respect to each other in a plurality of relative axial positions. The first device component unit is axially supported by device support means. The second device component unit extends beyond the second base tube end. An outer portion of the second device component unit extending beyond the second base tube end is adapted for connection with a column-guided object.

The device support means are axially movable with respect to the base tube in response to relative axial movement of the first and second device component units. More particularly, the axial movement of said device support means may be controlled in response to relative axial movement of the first and second device component units through tackle means.

The axial support means may be movable with respect to the base tube against elastic resistance in response to axial load on the positioning device.

According to a preferred embodiment, the axial movement of said device support means may be controlled in response to relative axial movement of the first and the second device component units by at least one flexible tension member running from a first anchoring point on said second device component unit via at least one pulley mounted on said device support means towards a second anchoring point on said base tube.With such an embodiment, axial outward movement of the second device component unit amounts to 1.5 times the axial extension of the positioning device.

The positioning device may be rotatable about the base tube axis with respect to the device support means and with respect to the tackle means.

Again, the positioning device may comprise a cylinder piston device having a piston rod member and a cylinder member. In such case, the first device component unit may comprise the piston rod member, and the second device component unit may comprise the cylinder member. Alternatively, the first device component unit may comprise the cylinder member, and the second device component unit may comprise the piston rod member. The cylinder piston device is e. g. a gas spring.

The column units of the present invention are particularly useful as vertical chair columns. Preferably, gas springs of the type as shown in US-PS 4,848,524 are used. A particular advantage is that the stroke of the gas spring may substantially correspond to the total length of the respective cylinder.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of the disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be explained in greater detail hereafter with reference to an embodiment shown in the accompanying drawings in which

- Fig. 1 shows a first embodiment of a chair column in the lowermost position;
- Fig. 2 shows the chair column of Fig. 1 in the uppermost position;
- Fig. 3 shows a modified embodiment of a chair column and
- Fig. 4 shows a further modified embodiment of a chair column.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In Figs. 1 and 2, a base tube is designated by 10. This base tube has an axis A-A, a first end 10a and a second end 10b. A support plate 12 is fastened inside the base tube 10. A gas spring 14 is accommodated within the base tube 10. The gas spring 14 comprises a cylinder 14a with a conical fastening section 14b for fastening a seat carrier 16 thereon. A piston rod 14c is sealingly guided through the lower end portion of the cylinder 14a. The piston rod 14c is connected with a piston 14d inside the cylinder 14a. The piston 14d separates within the cylinder 14a two working chambers 14e and 14f from each other. Both working chambers 14e and 14f are filled with a pressurized gas. The working chambers 14e and 14f are interconnected by an annular bypass channel 14g via openings 14h and 14i. The bypass channel 14g can be opened and closed by a control valve member 14k through a control pin 14l. The piston rod 14c is by its lower end supported through an axial ball bearing 18 on the support plate 12. The lower end of the piston rod 14c is capable of limited lateral movement along arrow 20 with respect to the support plate 12. The cylinder 14a is guided by a guiding sleeve 22. This guiding sleeve 22 is centered by a centering tube 26. The centering tube 26 is non-rotatably mounted within the base tube 10, and the guiding sleeve 22 is non-rotatably but axially movably guided within the centering tube 26. The cylinder 14a is axially and rotatably guided in the guiding sleeve 22. An abutment ring 24 is fixed to the lower end of the cylinder 14a. This abutment ring 24 is accommodated within an annular recess 22a of the guiding sleeve 22. The guiding sleeve 22 is provided with a stop flange 22b at the upper end thereof for axial engagement with the centering tube 26. The cylinder 14a is provided with a further abutment ring 28 for engagement with an upper end face 22c of the guiding sleeve 22.

In Fig. 1, the column unit is in the lowest possible position. The axial position of the guiding sleeve 22 is defined by the stop flange 22b being located between the upper end of the centering tube 26 and the further abutment ring 28. When the control valve 14k is opened by axial force on the control pin 14l, the cylinder 14a moves upwards with respect to the piston rod 14c towards the position as shown in Fig. 2. By said upward movement of the cylinder 14a, the guiding sleeve 22 is moved upwards. This may be due to frictional engagement of the cylinder 14a with the guiding sleeve 22, if the frictional force existing between the cylinder 14a and the guiding sleeve 22 is larger than the friction force existing between the guiding sleeve 22 and the centering tube 26. But even if this is not true, the guiding sleeve 22 is moved upwards anyway, as soon as the abutment ring 24 engages the shoulder face 22e. Such, the guiding sleeve 22 arrives at the position as shown in Fig. 2 as soon as the piston rod 14c has arrived at its most outward position with respect to the cylinder 14a (as shown in Fig. 2). One can easily see from Fig. 2 that a perfect guiding function is still warranted in the position of Fig. 2 between the cylinder 14a and the base tube 10 through the guiding sleeve 22 in spite of the fact that the cylinder 14a is located at the upper end 10b of the base tube 10. One recognizes that an increased stroke of the gas spring 14 is possible for a given length of the cylinder 14a. The stroke corresponds substantially to the axial length of the cylinder 14a. For bringing the column from the position as shown in Fig. 2 to the position as shown in Fig. 1, it is necessary to open the control valve 14k again and to exert a downward directed force F onto the cylinder 14a. On downward movement of the cylinder 14a, the guiding sleeve 22 may be entrained by frictional force downwards as long as the frictional force between the cylinder 14a and the guiding sleeve 22 is greater than the frictional force between the guiding sleeve 22 and the centering tube 26. If this is not true, the guiding sleeve 22 is moved downward anyway as soon as the further abutment ring 28 engages the upper end face 22c of the guiding sleeve 22.

The guiding sleeve 22 can be injection-molded from plastics material.

Due to the flange 22b, an excessive downward movement of the guiding sleeve 22 is prevented.

The lower end of the stand tube 10 is provided with a conical section 10d for engagement with a conical hole of a chair base.

In the embodiment of Fig. 3, analagous parts are designated by the same reference numbers as in Figs. 1 and 2 increased by 100.

In this embodiment, the support plate 112 is axially floating within the base tube 110. The guid-

ing sleeve 122 is resting on the support plate 112. A plastic coating 122g is provided on the inner side of the guiding sleeve 122. A plurality of tackles 132 are provided. A tackle 132 comprises a rope or wire 132a, which runs from an anchoring hook 132b provided on the cylinder 114a downwards and via two pulleys 132c to an anchoring point 132d provided on the base tube 110. The ropes 132a may be elastically stretchable so that the gas spring 114 is movable downwards against elastic resistance and provides a spring effect for a seat plate. When the cylinder 114a moves upward with respect to the piston rod 114c by a length unit 1, the support plate 112 and the guiding sleeve 122 are moved upwards by a length unit 1/2. Such, the guiding sleeve 122 is again telescoped outwards for improving the guiding function between the cylinder 114a and the base tube 110 in the higher range of positions. On downward movement of the cylinder 114a by a downwardly acting force F, the support plate 112 and the guiding sleeve 122 are moved downwards again. The downward movement of the guiding sleeve 122 may be due to a positive connection of the guiding sleeve 122 with the support plate 112 or may be effected through friction of the cylinder 11a with the plastic coating 122g on the inner surface of the guiding sleeve 122.

The anchoring hook 132b may be provided on a ring member 132g which is rotatable with respect to the cylinder 114a so that rotation of the gas spring 114 is posible with respect to the base tube 110 without twisting the tackles 132. The support plate 112 may be non-rotatably guided with respect to the base tube 110. The ropes 132a remain tensioned under all conditions. The elasticity of the ropes 132a allows elastic downward movement of the gas spring 114 under an axial load F.

Instead of making the ropes 132a elastically stretchable, one may also provide an axially elastic mounting for the anchoring points 132d or 132b.

The gas spring 114 may have the same design as shown in Fig. 2.

In the embodiment of Fig. 4, analogous parts are designated by the same reference numbers as in Fig. 1 increased by 200.

The gas spring of Fig. 4 is different from the gas spring in Figs. 1 to 3 and is designated by 238. This gas spring comprises a cylinder 238a. A piston rod 238c extends through the upper end of the cylinder 238a. A piston 238d is fastened to the piston rod 238c inside the cylinder 238a and separates two working chambers 238e and 238f from each other. The working chambers 238e and 238f are interconnectable by a bore 238g through the piston 238d. The bore 238g can be opened and closed through a valve plate 238k, which is actuatable through an actuating rod 238l extending through a bore of the piston rod 238c. The actuating rod 238l is controlled by a control lever 238m rotatably mounted on the seat carrier 216. A guide tube 240 is fastened to the piston rod 238c at 240a. The guide tube 240 is provided with a conical section 240b adapted to the seat carrier 216. The guide tube 240 may be slidably guided on the cylinder 238a. Moreover, the guide tube 240 is axially guided on the inside of the guiding sleeve 222 through a plastic coating 222g of the guiding sleeve 222. The guiding sleeve 222 is guided on the inside of the base tube 210 through a plastic coating 210f. The lower end of the cylinder 238a is supported by the support plate 212 through the ball bearing 218. The support plate 212 may be connected with the guide tube 240. A tackle 232 is provided by a flexible rope 232a running from an anchoring point 232b on the guide tube 240 via a pulley 232c provided on the support plate 212 to a further anchoring point 232d provided on the base tube 210.

On upward movement of the piston rod 238c with respect to the cylinder 238a, for a length unit 1 the support plate 212 is lifted through the tackle 232 by a length unit 1/2. So, the guiding sleeve 222 is moved upwards, when the piston rod 238c and the guide tube 240 move upwards so that the guiding function is maintained even in the highest position of the column unit.

The reference numerals in the claims are only used for facilitating the understanding and are by no means restrictive.

Claims

1. A column unit comprising a base tube (10), said base tube (10) having a base tube axis (A-A), a first base tube end (10a) and a second base tube end (10b), guiding means (22) being inserted into said base tube (10) adjacent said second base tube end (10b), a positioning device (14) having a device axis substantially coinciding with said base tube axis (A-A), a first device component unit (14c) and a second device component unit (14a), said first and said second device component units (14c,14a) being axially movable with respect to each other and being substantially lockable with respect to each other in a plurality of relative axial positions, said first device component unit (14c) being axially supported by device support means (12) and rotatable with respect thereto, said second device component unit (14a) extending beyond said second base tube end (10b), an outer portion (14b) of said second device component unit (14a) extending beyond said second base tube end (10b) and said guiding means (22) being adapted for

connection with a column-guided object (16), said second device component unit (14a) being in axially sliding guiding engagement with said guiding means (22), characterized by said guiding means (22) being axially slidingly guided along said base tube (10) with respect to said second base tube end (10b) in response to relative axial movement of said first and said second device component units (14c,14a), such as to be moved axially outwards of said base tube (10) with respect to said second base tube end (10b) in response to axially outward movement of said second device component unit (14a) out of said base tube (10) with respect to said second base tube end (10b), and to be axially moved inwards into said base tube (10) with respect to said second base tube end (10b) in response to axially inward movement of said second device component unit (14a) into said base tube (10) with respect to said second base tube end (10b).

2. A column unit as set forth in claim 1, said guiding means (22) being entrainable with said second device component unit (14a) in at least one axial direction of movement by frictional engagement of said second device component unit (14a) and said guiding means (22).

3. A column unit as set forth in claim 1, said guiding means (22) being entrainable by said second device component unit (14a) in at least one axial direction by abutment means (24,22e;28,22c).

4. A column unit as set forth in claim 1, said guiding means (22) being entrainable by said second device component unit (14a) in both axial directions through respective abutment means (24,22e;28,22c), said respective first and second abutment means permitting axially relative movement of said second device component unit (14a) and said guiding means (22).

5. A column unit as set forth in claim 1 or 3, said guiding means (22) being movable in a downward direction by gravity forces.

6. A column unit as set forth in one of claims 3 to 5, said second device component unit (14a) being provided with a first abutment ring (24), said first abutment ring (24) being accommodated within a radial inner annular recess (22a) of a guiding sleeve (22), said annular recess (22a) having a substantially axially directed end face (22e), said first abutment ring (24) being engageable with said end face (22e) for entraining said guiding sleeve (22) in a direction outwards of said base tube (10) with respect to said second end (10b) of said base tube (10).

7. A column unit as set forth in one of claims 3, 4 and 6, said second device component unit (14a) being provided with a second abutment member (28) engageable with said guiding means (22) for entraining said guiding means (22) inwards of said base tube (10) with respect to said second base tube end (10b).

8. A column unit as set forth in claim 7, said second abutment member (28) being provided by a column-guided object (16) fastened to said second device component unit (14a).

9. A column unit as set forth in one of claims 1 to 8, said guiding means (22) being centered within said base tube (10) by a centering tube (26).

10. A column unit as set forth in claim 9, said centering tube (26) being fixed against rotation about said base tube axis (A-A) with respect to said base tube (10).

11. A column unit as set forth in one of claims 1 to 10, said guiding means (22) being fixed against rotation with respect to said base tube (10).

12. A column unit as set forth in one of claims 1 to 11, said base tube (10) being provided with a stop face limiting inward movement of said guiding means (22) inwards of said base tube (10).

13. A column unit as set forth in one of claims 1 to 12, said guiding means (22) being at least partially made of a plastics material, e.g. in the form of a guiding sleeve.

14. A column unit as set forth in one of claims 1 to 13, said device support means (12) being provided inside said base tube (10).

15. A column unit as set forth in one of claims 1 to 14, said second device component unit (14a) being provided at an axial end thereof remote from said device support means (12) with locking control means (14k,14l).

16. A column unit as set forth in one of claims 1 to 15,
said device support means (12) being axially fixed with respect to said base tube (10).

17. A column unit as set forth in one of claims 1 to 15,
said device support means (112) being axially movable with respect to said base tube (110).

18. A column unit as set forth in claim 17,
said device support means (112) being axially movable with respect to said base tube (110) in response to relative axial movement of said first and said second device component units (114c,114a).

19. A column unit as set forth in claim 18,
axial movement of said device support means (112) being controlled in response to relative axial movement of said first and second device component units (114c,114a) through tackle means (132).

20. A column unit as set forth in one of claims 17 to 19,
said device support means (112) being movable in locked condition with respect to said base tube (110) against elastic resistance in response to axial load (F) on said positioning device (114).

21. A column unit as set forth in claim 19 or 20,
axial movement of said device support means (112) being controlled in response to relative axial movement of said first and said second device components units (114c,114a) by at least one flexible tension member (132a) running from a first anchoring point (132b) of said second device component unit (114a) via at least one pulley (132c) mounted on said device support means (112) towards a second anchoring point (132d) on said base tube (110), said guiding means (122) being axially movable together with said device support means (112).

22. A column unit as set forth in one of claims 19 to 21,
said positioning device (114) being rotatable about said base tube axis (A-A) with respect to said device support means (112) and with respect to said tackle means (132).

23. A column unit as set forth in claim 21,
said first anchoring point (132b) being rotatable with respect to said second device component unit (114a) about said base tube axis (A-A).

24. A column unit as set forth in one of claims 19 to 23,
said tackle means (132) comprising at least one elastically stretchable flexible tension member (132a).

25. A column unit as set forth in one of claims 19 to 23,
said tackle means (132) comprising a flexible tension member (132a) having at least one end axially fixed to an elastically displaceable anchoring point (132b, 132d).

26. A column unit as set forth in one of claims 1 to 25,
said positioning device (14) comprising a cylinder piston device (14) and more particularly a gas spring (14) having a piston rod member (14c) and a cylinder member (14a).

27. A column unit as set forth in claim 26,
said first device component unit (14c) comprising said piston rod member (14c) and said second device component unit (14a) comprising said cylinder member (14a).

28. A column unit as set forth in claim 26,
said first device component unit (238a) comprising said cylinder member (238a) and said second device component unit (238c) comprising a guide tube (240) axially fixed with respect to said piston rod member (238c) and guided within said guiding means (222).

29. A column unit comprising a base tube (110), said base tube (110) having a base tube axis, a first base tube end (110a) and a second base tube end (110b), a positioning device (114) having a device axis substantially coinciding with said base tube axis, a first device component unit (114c) and a second device component unit (114a), said first and said second device component units (114c,114a) being axially movable with respect to each other and being substantially lockable with respect to each other in a plurality of relative axial positions, said first device component unit (114c) being axially supported by device support means (112), said second device component unit (114a) extending beyond said second base tube end (110b), an outer portion (114b) of said second device component unit (114a) extending beyond said second base tube end (110b) being adapted for connection with a column-guided object, characterized by said device support means (112) being axially movable with respect to said base tube (110) in response to relative axial movement of said

first and said second device component units (114c,114a).

30. A column unit as set forth in claim 29, axial movement of said device support means (112) being controlled in response to relative axial movement of said first and second device component units (114c, 114a) through tackle means (132).

31. A column unit as set forth in one of claims 29 to 30, said device support means being movable with respect to said base tube (110) against elastic resistance in response to axial load (F) on said positioning device (114).

32. A column unit as set forth in claim 30 or 31, axial movement of said device support means (112) being controlled in response to relative axial movement of said first and said second device component units (114c,114a) by at least one flexible tension member (132a) running from a first anchoring point (132b) on said second device component unit (114a) via at least one pulley (132c) mounted on said device support means (112) towards a second anchoring point (132d) on said base tube (110).

33. A column unit as set forth in one of claims 30 to 32, said positioning device (114) being rotatable about said base tube axis with respect to said device support means (112) and with respect to said tackle means (132).

34. A column unit as set forth in one of claims 29 to 33, said positioning device (114) comprising a cylinder piston device (114) and more particularly a gas spring (114) having a piston rod member (114c) and a cylinder member (114a).

35. A column unit as set forth in claim 34, said first device component unit (114c) comprising said piston rod member (114c) and said second device component unit (114a) comprising said cylinder member (114a).

36. A column unit as set forth in claim 34, said first device component unit (238a) comprising said cylinder member (238a) and said second device component unit (238c) comprising said piston rod member (238c).

37. A column unit as set forth in one of claims 29 to 36, said second device component unit (114a) being guided with respect to said base tube (110) by guiding means (122), said guiding means (122) being axially movable with respect to said base tube (110) and to said second device component unit (114a), such as to be moved outward of said base tube (110), when said second device component unit (114a) is moved outward with respect to said second base tube end (110b) and as to be moved inward of said base tube (110), when said second device component unit (114a) is moved inward with respect to said second base tube end (110b).

38. A column unit as set forth in claim 37, the axial movement of said guiding means (122) being controlled in response to relative axial movement of said first and second device component units (114c,114a) through tackle means (132).

39. A column unit as set forth in claim 37 or 38, said guiding means (122) being combined for common axial movement with said support means (112).

Patentansprüche

1. Säuleneinheit, umfassend
ein Basisrohr (10), welches Basisrohr (10) eine Basisrohrachse (A-A), ein erstes Basisrohrende (10a) und ein zweites Basisrohrende (10b) aufweist, wobei Führungsmittel (22) in das Basisrohr (10) benachbart dem zweiten Basisrohrende (10b) eingeführt sind,
eine Positioniervorrichtung (14), die eine im wesentlichen mit der Basisrohrachse (A-A) zusammenfallende Vorrichtungsachse, eine erste Vorrichtungsteileinheit (14c) und eine zweite Vorrichtungsteileinheit (14a) aufweist, wobei die erste und die zweite Vorrichtungsteileinheit (14c, 14a) bezüglich einander axial bewegbar und bezüglich einander in einer Mehrzahl von axialen Relativstellungen im wesentlichen feststellbar sind, wobei die erste Vorrichtungsteileinheit (14c) durch Vorrichtungstragmittel (12) axial getragen und bezüglich dieser drehbar ist, wobei die zweite Vorrichtungsteileinheit (14a) sich über das zweite Basisrohrende (10b) hinaus erstreckt, wobei ein sich über das zweite Basisrohrende (10b) und die Führungsmittel (22) hinaus erstreckender Außenabschnitt (14b) der zweiten Vorrichtungsteileinheit (14a) zur Verbindung mit einem säulengeführten Gegenstand (16) geeignet sind, wobei die zweite Vorrichtungsteileinheit (14a) in axialem Verschiebe-Führungseingriff mit den Führungsmitteln

(22) steht,
dadurch gekennzeichnet, daß die Führungsmittel (22) entlang dem Basisrohr (10) bezüglich des zweiten Basisrohrendes (10b) in Antwort auf eine axiale Relativbewegung der ersten und der zweiten Vorrichtungsteileinheit (14c, 14a) axial verschiebbar derart geführt sind, daß sie in Antwort auf eine axiale Auswärtsbewegung der zweiten Vorrichtungsteileinheit (14a) bezüglich des zweiten Basisrohrendes (10b) heraus aus dem Basisrohr (10) bezüglich des zweiten Basisrohrendes (10b) axial aus dem Basisrohr (10) heraus bewegt werden, und daß sie in Antwort auf eine axiale Einwärtsbewegung der zweiten Vorrichtungsteileinheit (14a) bezüglich des zweiten Basisrohrendes (10b) in das Basisrohr (10) bezüglich des zweiten Basisrohrendes (10b) axial in das Basisrohr (10) hinein bewegt werden.

2. Säuleneinheit nach Anspruch 1, wobei die Führungsmittel (22) von der zweiten Vorrichtungsteileinheit (14a) in wenigstens einer axialen Bewegungsrichtung durch Reibungseingriff der zweiten Vorrichtungsteileinheit (14a) und der Führungsmittel (22) mitnehmbar sind.

3. Säuleneinheit nach Anspruch 1, wobei die Führungsmittel (22) durch die zweite Vorrichtungsteileinheit (14a) in wenigstens einer axialen Richtung durch Anlagemittel (24, 22e; 28, 22c) mitnehmbar sind.

4. Säuleneinheit nach Anspruch 1, wobei die Führungsmittel (22) durch die zweite Vorrichtungsteileinheit (14a) in beiden axialen Richtungen durch jeweilige Anlagemittel (24, 22e; 28, 22c) mitnehmbar sind, wobei die jeweiligen ersten und zweiten Anlagemittel eine axiale Relativbewegung der zweiten Vorrichtungsteileinheit (14a) und der Führungsmittel (22) zulassen.

5. Säuleneinheit nach Anspruch 1 oder 3, wobei die Führungsmittel (22) durch Gravitationskräfte in einer Abwärtsrichtung bewegbar sind.

6. Säuleneinheit nach einem der Ansprüche 3 bis 5, wobei die zweite Vorrichtungsteileinheit (14a) mit einem ersten Anlagering (24) versehen ist, wobei der erste Anlagering (24) innerhalb einer radial inneren ringförmigen Ausnehmung (22a) einer Führungshülse (22) aufgenommen ist, wobei die ringförmige Ausnehmung (22a) eine im wesentlichen axial gerichtete Stirnfläche (22e) aufweist, wobei der erste Anlagering (24) mit der Stirnfläche (22e) in Eingriff bringbar ist zum Mitnehmen der Führungshülse (22) bezüglich des zweiten Endes (10b) des Basisrohrs (10) in einer Richtung aus dem Basisrohr (10) heraus.

7. Säuleneinheit nach einem der Ansprüche 3, 4 und 6, wobei die zweite Vorrichtungsteileinheit (14a) mit einem zweiten Anlageelement (28) versehen ist, welches mit den Führungsmitteln (22) in Eingriff bringbar ist zum Mitnehmen der Führungsmittel (22) bezüglich des zweiten Basisrohrendes (10b) in das Basisrohr (10) hinein.

8. Säuleneinheit nach Anspruch 7, wobei das zweite Anlageelement (28) durch einen säulengeführten Gegenstand (16) bereitgestellt ist, der an der zweiten Vorrichtungsteileinheit (14a) befestigt ist.

9. Säuleneinheit nach einem der Ansprüche 1 bis 8, wobei die Führungsmittel (22) innerhalb des Basisrohrs (10) durch ein Zentrierrohr (26) zentriert sind.

10. Säuleneinheit nach Anspruch 9, wobei das Zentrierrohr (26) gegen Drehung um die Basisrohrachse (A-A) bezüglich des Basisrohrs (10) festgelegt ist.

11. Säuleneinheit nach einem der Ansprüche 1 bis 10, wobei die Führungsmittel (22) gegen Drehung bezüglich des Basisrohrs (10) festgelegt sind.

12. Säuleneinheit nach einem der Ansprüche 1 bis 11, wobei das Basisrohr (10) mit einer Anschlagfläche versehen ist, die die Einwärtsbewegung der Führungsmittel (22) in das Basisrohr (10) hinein begrenzt.

13. Säuleneinheit nach einem der Ansprüche 1 bis 12, wobei die Führungsmittel (22) wenigstens teilweise aus einem Kunststoffmaterial bestehen, z.B. in der Form einer Führungshülse.

14. Säuleneinheit nach einem der Ansprüche 1 bis 13, wobei die Vorrichtungstragmittel (12) im Inneren des Basisrohrs (10) vorgesehen sind.

15. Säuleneinheit nach einem der Ansprüche 1 bis 14, wobei die zweite Vorrichtungsteileinheit (14a) an einem von den Vorrichtungstragmitteln (12) entfernten axialen Ende derselben mit Feststellsteuermitteln (14k, 14l) versehen ist.

16. Säuleneinheit nach einem der Ansprüche 1 bis 15, wobei die Vorrichtungstragmittel (12) bezüglich des Basisrohrs (10) axial festgelegt sind.

17. Säuleneinheit nach einem der Ansprüche 1 bis 15, wobei die Vorrichtungstragmittel (112) bezüglich des Basisrohrs (110) axial bewegbar sind.

18. Säuleneinheit nach Anspruch 17, wobei die Vorrichtungstragmittel (112) bezüglich des Basisrohrs (110) in Antwort auf eine axiale Relativbewegung der ersten und der zweiten Vorrichtungsteileinheit (114c, 114a) axial bewegbar sind.

19. Säuleneinheit nach Anspruch 18, wobei die axiale Bewegung der Vorrichtungstragmittel (112) durch Flaschenzugmittel (132) in Antwort auf eine axiale Relativbewegung der ersten und der zweiten Vorrichtungsteileinheit (114c, 114a) gesteuert ist.

20. Säuleneinheit nach einem der Ansprüche 17 bis 19, wobei die Vorrichtungstragmittel (112) im Feststellzustand in Antwort auf eine Axiallast (F) an der Positioniervorrichtung (114) bezüglich des Basisrohrs (110) gegen einen elastischen Widerstand bewegbar sind.

21. Säuleneinheit nach Anspruch 19 oder 20, wobei die axiale Bewegung der Vorrichtungstragmittel (112) durch wenigstens ein flexibles Zugelement (132a) in Antwort auf eine axiale Relativbewegung der ersten und der zweiten Vorrichtungsteileinheit (114c, 114a) gesteuert ist, wobei das wenigstens eine flexible Zugelement (132a) von einem ersten Verankerungspunkt (132b) der zweiten Vorrichtungsteileinheit (114a) über wenigstens eine an den Vorrichtungstragmitteln (112) angebrachte Rolle (132c) hin zu einem zweiten Verankerungspunkt (132d) an dem Basisrohr (110) verläuft, wobei die Führungsmittel (122) zusammen mit den Vorrichtungstragmitteln (112) axial bewegbar sind.

22. Säuleneinheit nach einem der Ansprüche 19 bis 21, wobei die Positioniervorrichtung (114) bezüglich der Vorrichtungstragmittel (112) und bezüglich der Flaschenzugmittel (132) um die Basisrohrachse (A-A) drehbar ist.

23. Säuleneinheit nach Anspruch 21, wobei der erste Verankerungspunkt (132b) bezüglich der zweiten Vorrichtungsteileinheit (114a) um die Basisrohrachse (A-A) drehbar ist.

24. Säuleneinheit nach einem der Ansprüche 19 bis 23, wobei die Flaschenzugmittel (132) wenigstens ein elastisch dehnbares flexibles Zugelement (132a) umfassen.

25. Säuleneinheit nach einem der Ansprüche 19 bis 23, wobei die Flaschenzugmittel (132) ein flexibles Zugelement (132a) umfassen, von dem wenigstens ein Ende an einem elastisch verlagerbaren Verankerungspunkt (132b, 132d) axial festgelegt ist.

26. Säuleneinheit nach einem der Ansprüche 1 bis 25, wobei die Positioniervorrichtung (14) eine Zylinderkolbenvorrichtung (14), insbesondere eine Gasfeder mit einem Kolbenstangenelement (14c) und einem Zylinderelement (14a), umfaßt.

27. Säuleneinheit nach Anspruch 26, wobei die erste Vorrichtungsteileinheit (14c) das Kolbenstangenelement (14c) umfaßt und wobei die zweite Vorrichtungsteileinheit (14a) das Zylinderelement (14a) umfaßt.

28. Säuleneinheit nach Anspruch 26, wobei die erste Vorrichtungsteileinheit (238a) das Zylinderelement (238a) umfaßt und die zweite Vorrichtungsteileinheit (238c) ein bezüglich des Kolbenstangenelements (238c) axial festgelegtes und innerhalb der Führungsmittel (222) geführtes Führungsrohr (240) umfaßt.

29. Säuleneinheit, umfassend
ein Basisrohr (110), wobei das Basisrohr (110) eine Basisrohrachse, ein erstes Basisrohrende (110a) und ein zweites Basisrohrende (110b) aufweist,
eine Positioniervorrichtung (114), die eine mit der Basisrohrachse im wesentlichen zusammenfallende Vorrichtungsachse, eine erste Vorrichtungsteileinheit (114c) und eine zweite Vorrichtungsteileinheit (114a) aufweist, wobei die erste und die zweite Vorrichtungsteileinheit (114c, 114a) bezüglich einander axial bewegbar und bezüglich einander in einer Vielzahl von axialen Relativstellungen im wesentlichen feststellbar sind, wobei die erste Vorrichtungsteileinheit (114c) durch Vorrichtungstragmittel (112) axial getragen ist, wobei die zweite Vorrichtungsteileinheit (114a) sich über das zweite Basisrohrende (110b) hinaus erstreckt, wobei ein sich über das zweite Basisrohrende (110b) hinaus erstreckender Außenabschnitt (114b) der zweiten Vorrichtungsteileinheit (114a) zur Verbindung mit einem säulengeführten Gegenstand geeignet ist,
dadurch gekennzeichnet, daß die Vorrichtungstragmittel (112) in Antwort auf eine axiale Relativbewegung der ersten und der zweiten Vorrichtungsteileinheit (114c, 114a) bezüglich des Basisrohrs (110) axial bewegbar sind.

30. Säuleneinheit nach Anspruch 29, wobei die axiale Bewegung der Vorrichtungstragmittel (112) durch Flaschenzugmittel (132) in Antwort auf eine axiale Relativbewegung der ersten und der zweiten Vorrichtungsteileinheit (114c, 114a) gesteuert ist.

31. Säuleneinheit nach Anspruch 29 oder 30, wobei die Vorrichtungstragmittel in Antwort auf eine Axiallast (F) an der Positioniervorrichtung (114) bezüglich des Basisrohrs (110) gegen einen elastischen Widerstand bewegbar sind.

32. Säuleneinheit nach Anspruch 30 oder 31, wobei die axiale Bewegung der Vorrichtungstragmittel (112) durch wenigstens ein flexibles Zugelement (132a) in Antwort auf eine axiale Relativbewegung der ersten und der zweiten Vorrichtungsteileinheit (114c, 114a) gesteuert ist, wobei das wenigstens eine flexible Zugelement (132a) von einem ersten Verankerungspunkt (132b) an der zweiten Vorrichtungsteileinheit (114a) über wenigstens eine an den Vorrichtungstragmitteln (112) angebrachte Rolle (132c) hin zu einem zweiten Verankerungspunkt (132d) an dem Basisrohr (110) verläuft.

33. Säuleneinheit nach einem der Ansprüche 30 bis 32, wobei die Positioniervorrichtung (114) bezüglich der Vorrichtungstragmittel (112) und bezüglich der Flaschenzugmittel (132) um die Basisrohrachse drehbar ist.

34. Säuleneinheit nach einem der Ansprüche 29 bis 33, wobei die Positioniervorrichtung (114) eine Zylinderkolbenvorrichtung (114), insbesondere eine Gasfeder (114) mit einem Kolbenstangenelement (114c) und einem Zylinderelement (114a), umfaßt.

35. Säuleneinheit nach Anspruch 34, wobei die erste Vorrichtungsteileinheit (114c) das Kolbenstangenelement (114c) umfaßt, und wobei die zweite Vorrichtungsteileinheit (114a) das Zylinderelement (114a) umfaßt.

36. Säuleneinheit nach Anspruch 34, wobei die erste Vorrichtungsteileinheit (238a) das Zylinderelement (238a) umfaßt und wobei die zweite Vorrichtungsteileinheit (238c) das Kolbenstangenelement (238c) umfaßt.

37. Säuleneinheit nach einem der Ansprüche 29 bis 36, wobei die zweite Vorrichtungsteileinheit (114a) bezüglich des Basisrohrs (110) durch Führungsmittel (122) geführt ist, wobei die Führungsmittel (122) bezüglich des Basisrohrs (110) und der zweiten Vorrichtungsteileinheit (114a) derart axial bewegbar sind, daß sie aus dem Basisrohr (110) heraus bewegt werden, wenn die zweite Vorrichtungsteileinheit (114a) bezüglich des zweiten Basisrohrendes (110b) auswärts bewegt wird, und daß sie in das Basisrohr (110) hinein bewegt werden, wenn die zweite Vorrichtungsteileinheit (114a) bezüglich des zweiten Basisrohrendes (110b) einwärts bewegt wird.

38. Säuleneinheit nach Anspruch 37, wobei die axiale Bewegung der Führungsmittel (122) durch Flaschenzugmittel (132) in Antwort auf eine axiale Relativbewegung der ersten und der zweiten Vorrichtungsteileinheit (114c, 114a) gesteuert ist.

39. Säuleneinheit nach Anspruch 37 oder 38, wobei die Führungsmittel (122) mit den Tragmitteln (112) zur gemeinsamen axialen Bewegung verbunden sind.

Revendications

1. Organe formant colonne comprenant un tube de base (10), ledit tube de base (10) présentant un axe de tube de base (A-A), une première extrémité du tube de base (10a) et une deuxième extrémité du tube de base (10b), des moyens de guidage (22) étant insérés dans ledit tube de base (10) de manière adjacente à ladite deuxième extrémité du tube de base (10b), un dispositif de positionnement (14) présentant un axe de dispositif coincidant sensiblement avec ledit axe du tube de base (A-A), un premier organe formant composant du dispositif (14c) et un deuxième organe formant composant du dispositif (14a), lesdits organes formant premier et deuxième organes du dispositif (14c, 14a) pouvant se déplacer dans le sens axial l'un par rapport à l'autre et pouvant être sensiblement bloqués l'un par rapport à l'autre dans une pluralité de positions axiales relatives, ledit organe formant premier composant du dispositif (14c) étant supporté dans le sens axial par des moyens de support du dispositif (12) et pouvant tourner par rapport à ce dernier, ledit organe formant deuxième composant du dispositif (14a) s'étendant au-delà de ladite deuxième extrémité du tube de base (10b), une partie extérieure (14b) dudit organe formant deuxième composant du dispositif (14a) s'étendant au-delà de ladite deuxième extrémité du tube de base (10b) et lesdits moyens de guidage (22) étant adaptés pour être raccordés à un objet guidé par la colonne (16), ledit organe formant deuxième composant du dispositif (14a) étant en prise

par coulissement dans le sens axial en vue d'assurer son guidage avec lesdits moyens de guidage (22), caractérisé en ce que lesdits moyens de guidage (22) sont guidés par coulissement dans le sens axial le long dudit tube de base (10) par rapport à ladite deuxième extrémité du tube de base (10b) en réponse au déplacement axial relatif desdits organes formant premier et deuxième composants du dispositif (14c, 14a), de manière à être déplacés dans le sens axial vers l'extérieur dudit tube de base (10) par rapport à ladite deuxième extrémité du tube de base (10b) en réponse au déplacement vers l'extérieur dans le sens axial dudit organe formant deuxième composant du dispositif (14a) hors dudit tube de base (10) par rapport à ladite deuxième extrémité du tube de base (10b), et pour être déplacé dans le sens axial vers l'intérieur dans ledit tube de base (10) par rapport à ladite deuxième extrémité du tube de base (10b) en réponse au déplacement vers l'intérieur dans le sens axial dudit organe formant deuxième composant du dispositif (14a) dans ledit tube de base (10) par rapport à ladite deuxième extrémité du tube de base (10b).

2. Organe formant colonne selon la revendication 1, caractérisé en ce que ledit moyen de guidage (22) peut être entraîné avec ledit organe formant deuxième composant du dispositif (14a) dans au moins un sens axial de déplacement par mise en prise par friction dudit organe formant deuxième composant du dispositif (14a) et dudit moyen de guidage (22).

3. Organe formant colonne selon la revendication 1, caractérisé en ce que ledit moyen de guidage (22) peut être entrainé par ledit organe formant deuxième composant du dispositif (14a) dans au moins un sens axial par des moyens formant butées (24, 22e; 28, 22c).

4. Organe formant colonne selon la revendication 1, caractérisé en ce que ledit moyen de guidage (22) peut être entraîné par ledit organe formant deuxième composant du dispositif (14a) dans les deux sens axiaux par des moyens respectifs formant butées (24, 22e; 28, 22c), lesdits premier et deuxième moyens respectifs formant butées permettant le déplacement axial relatif dudit organe formant deuxième composant du dispositif (14a) et dudit moyen de guidage (22).

5. Organe formant colonne selon la revendication 1 ou 3, caractérisé en ce que lesdits moyens de guidage (22) peuvent se déplacer vers le bas sous l'action de forces de gravité.

6. Organe formant colonne selon l'une quelconque des revendications 3 à 5, caractérisé en ce que ledit organe formant deuxième composant du dispositif (14a) est pourvu d'une première bague de butée (24), ladite première bague de butée (24) étant logée à l'intérieur d'un évidement annulaire intérieur radial (22a) d'un manchon de guidage (22), ledit évidement annulaire (22a) comportant une face d'extrémité dirigée dans un sens sensiblement axial (22e), ladite première bague de butée (24) pouvant se mettre en prise avec ladite face d'extrémité (22e) pour entraîner ledit manchon de guidage (22) dans un sens vers l'extérieur dudit tube de base (10) par rapport à ladite deuxième extrémité (10b) dudit tube de base (10).

7. Organe formant colonne selon l'une quelconque des revendications 3, 4 et 6, caractérisé en ce que ledit organe formant deuxième composant du dispositif (14a) est pourvu d'un deuxième élément formant butée (28) pouvant se mettre en prise avec ledit moyen de guidage (22) pour entraîner ledit moyen de guidage (22) vers l'intérieur dudit tube de base (10) par rapport à ladite deuxième extrémité du tube de base (10b).

8. Organe formant colonne selon la revendication 7, caractérisé en ce que ledit deuxième élément de butée (28) est pourvu d'un objet guidé par la colonne (16) fixé audit organe formant deuxième composant du dispositif (14a).

9. Organe formant colonne selon l'une quelconque des revendications 1 à 8, caractérisé en ce que ledit moyen de guidage (22) est centré à l'intérieur dudit tube de base (10) par un tube de centrage (26).

10. Organe formant colonne selon la revendication 9, caractérisé en ce que ledit tube de centrage (26) est bloqué en rotation autour dudit axe du tube de base (A-A) par rapport audit tube de base (10).

11. Organe formant colonne selon l'une quelconque des revendications 1 à 10, caractérisé en ce que ledit moyen de guidage (22) est bloqué en rotation par rapport audit tube de base (10).

12. Organe formant colonne selon quelconque des revendications 1 à 11, caractérisé en ce que ledit tube de base (10) est pourvu d'une face d'arrêt limitant le mouvement vers l'intérieur

dudit moyen de guidage (22) vers l'intérieur dudit tube de base (10).

13. Organe formant colonne selon l'une quelconque des revendications 1 à 12, caractérisé en ce que ledit moyen de guidage (22) est au moins partiellement constitué d'un matériau plastique, par exemple, sous forme d'un manchon de guidage.

14. Organe formant colonne selon l'une quelconque des revendications 1 à 13, caractérisé en ce que ledit moyen formant support de dispositif (12) est prévu à l'intérieur dudit tube de base (10).

15. Organe formant colonne selon l'une quelconque des revendications 1 à 14, caractérisé en ce que ledit organe formant deuxième composant du dispositif (14a) est prévu à une extrémité axiale de ce dernier, éloignée dudit moyen formant support du dispositif (12) avec des moyens de commande de blocage (14k, 14l).

16. Organe formant colonne selon l'une quelconque des revendications 1 à 15, caractérisé en ce que ledit moyen formant support du dispositif (12) est fixé dans le sens axial par rapport audit tube de base (10).

17. Organe formant colonne selon l'une quelconque des revendications 1 à 15, caractérisé en ce que ledit moyen formant support du dispositif (112) peut se déplacer dans le sens axial par rapport audit tube de base (110).

18. Organe formant colonne selon la revendication 17, caractérisé en ce que ledit moyen formant support du dispositif (112) peut se déplacer dans le sens axial par rapport audit tube de base (110) en réponse au déplacement axial relatif desdits organes formant premier et deuxième composants du dispositif (114c, 114a).

19. Organe formant colonne selon la revendication 18, caractérisé en ce que le déplacement axial dudit moyen formant support du dispositif (112) est commandé en réponse au déplacement axial relatif desdits organes formant premier et deuxième composants du dispositif (114c, 114a) par des moyens formant palans (132).

20. Organe formant colonne selon l'une quelconque des revendications 17 à 19, caractérisé en ce que ledit moyen formant support du dispositif (112) peut se déplacer dans un état bloqué par rapport audit tube de base (110) en s'opposant à la résistance élastique en réponse à la charge axiale (F) sur ledit dispositif de positionnement (114).

21. Organe formant colonne selon l'une quelconque des revendications 19 ou 20, caractérisé en ce que le déplacement axial dudit moyen formant support du dispositif (112) est commandé en réponse au déplacement axial relatif desdits organes formant premier et deuxième composants du dispositif (114c, 114a), par au moins un élément de tension flexible (132a), s'étendant depuis un premier point d'ancrage (132b) dudit organe formant deuxième composant du dispositif (114a) via au moins une poulie (132c) fixée sur ledit moyen de support du dispositif (112) en direction d'un deuxième point d'ancrage (132d) sur ledit tube de base (110), ledit moyen de guidage (122) pouvant se déplacer dans le sens axial avec ledit moyen de support du dispositif (112).

22. Organe formant colonne selon l'une quelconque des revendications 19 à 21, caractérisé en ce que ledit dispositif de positionnement (114) peut tourner autour dudit axe du tube de base (A-A) par rapport audit moyen formant support du dispositif (112) et par rapport audit moyen formant palan (132).

23. Organe formant colonne selon la revendication 21, caractérisé en ce que ledit premier point d'ancrage (132b) peut tourner par rapport audit organe formant deuxième composant du dispositif (114a) autour dudit axe du tube de base (A-A).

24. Organe formant colonne selon l'une quelconque des revendications 19 à 23, caractérisé en ce que ledit moyen formant palan (132) comprend au moins un élément de tension flexible pouvant s'étirer de manière élastique (132a).

25. Organe formant colonne selon l'une quelconque des revendications 19 à 23, caractérisé en ce que ledit moyen formant palan (132) comprend un élément de tension flexible (132a) comprenant au moins une extrémité fixée dans le sens axial à un point d'ancrage pouvant se déplacer de manière élastique (132b, 132d).

26. Organe formant colonne selon l'une quelconque des revendications 1 à 25, caractérisé en ce que ledit dispositif de positionnement (14) comprend un dispositif formant piston de cylindre (14) et plus particulièrement un ressort à

gaz (14) comportant un élément formant tige de piston (14c) et un élément formant cylindre (14a).

27. Organe formant colonne selon la revendication 26, caractérisé en ce que ledit organe formant premier composant du dispositif (14c) comprend ledit élément formant tige de piston (14c) et ledit organe formant deuxième composant du dispositif (14a) comprenant ledit organe formant cylindre (14a).

28. Organe formant colonne selon la revendication 26, caractérisé en ce que ledit organe formant premier composant du dispositif (238a) comprend ledit organe formant cylindre (238a) et ledit organe formant deuxième composant du dispositif (238c) comprend un tube de guidage (240) fixé dans le sens axial par rapport audit élément formant tige de piston (238c) et guidé à l'intérieur dudit moyen de guidage (222).

29. Organe formant colonne comprenant un tube de base (110), ledit tube de base (110) comportant un axe du tube de base, une première extrémité du tube de base (110a) et une deuxième extrémité du tube de base (110b), un dispositif de positionnement (114) comportant un axe de dispositif coincidant sensiblement avec ledit axe du tube de base, un organe formant premier composant du dispositif (114c) et un organe formant deuxième composant du dispositif (114a), lesdits organes formant premier et deuxième composants du dispositif (114c, 114a) pouvant se déplacer dans le sens axial l'un par rapport à l'autre, et pouvant être sensiblement bloqués l'un par rapport à l'autre en une pluralité de positions axiales relatives, ledit organe formant premier composant du dispositif (114c) étant supporté dans le sens axial par des moyens de support du dispositif (112), ledit organe formant deuxième composant du dispositif (114a) s'étendant au-delà de ladite deuxième extrémité du tube de base (110b), une partie extérieure (114b) dudit organe formant deuxième composant du dispositif (114a) s'étendant au-delà de ladite deuxième extrémité du tube de base (110b) étant adaptée pour être raccordée avec un objet guidé par la colonne, caractérisé par ledit moyen formant support du dispositif (112) étant mobile dans le sens axial par rapport audit tube de base (110) en réponse au déplacement axial relatif desdits organes formant premier et deuxième composants du dispositif (114c, 114a).

30. Organe formant colonne selon la revendication 29, caractérisé en ce que le déplacement axial dudit moyen formant support du dispositif (112) est commandé en réponse au déplacement axial relatif desdits organes formant premier et deuxième composants du dispositif (114c, 114a) par des moyens formant palans (132).

31. Organe formant colonne selon l'une quelconque des revendications 29 ou 30, caractérisé en ce que ledit moyen formant support du dispositif peut se déplacer par rapport audit tube de base (110) en s'opposant à la résistance élastique en réponse à une charge axiale (F) sur ledit dispositif de positionnement (114).

32. Organe formant colonne selon la revendication 30 ou 31, caractérisé en ce que le déplacement axial dudit moyen formant support du dispositif (112) est commandé en réponse au déplacement axial relatif desdits organes formant premier et deuxième composants du dispositif (114c, 114a) par au moins un élément de tension flexible (132a) s'étendant depuis un premier point d'ancrage (132b) sur ledit organe formant deuxième composant du dispositif (114a) via au moins une poulie (132c) fixée sur ledit moyen formant support du dispositif (112) en direction d'un deuxième point d'ancrage (132d) sur ledit tube de base (110).

33. Organe formant colonne selon l'une quelconque des revendications 30 à 32, caractérisé en ce que ledit dispositif de positionnement (114) peut tourner autour dudit axe du tube de base par rapport audit moyen formant support du dispositif (112) et par rapport audit moyen formant palan (132).

34. Organe formant colonne selon l'une quelconque des revendications 29 à 33, caractérisé en ce que ledit dispositif de positionnement (114) comprend un dispositif formant piston de cylindre (114) et plus particulièrement un ressort à gaz (114) comportant un élément formant tige de piston (114c) et un élément formant cylindre (114a).

35. Organe formant colonne selon la revendication 34, caractérisé en ce que ledit organe formant premier composant du dispositif comprend ledit élément formant tige de piston (114c) et en ce que ledit organe formant deuxième composant du dispositif (114a) comprend ledit élément formant cylindre (114a).

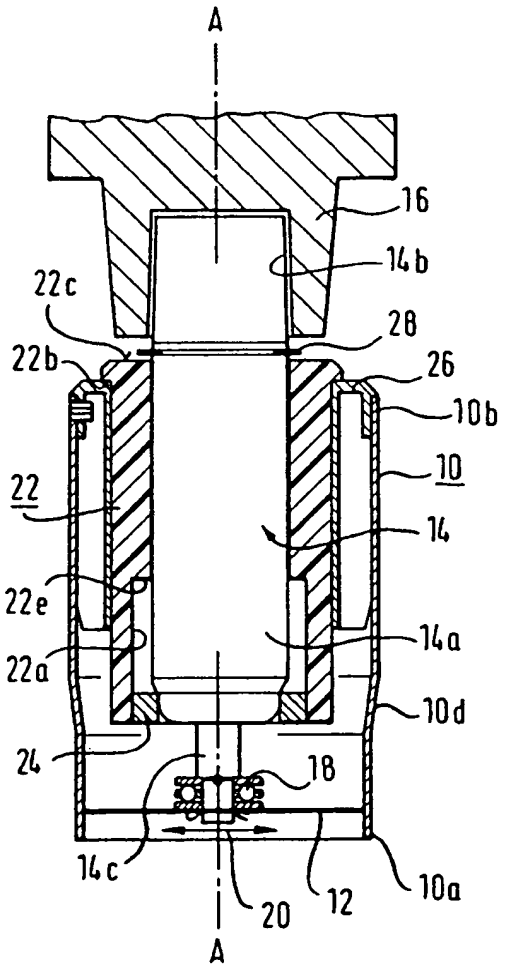
36. Organe formant colonne selon la revendication 34, caractérisé en ce que ledit organe formant premier composant du dispositif (238a) comprend ledit élément formant cylindre (238a) et en ce que ledit organe formant deuxième composant du dispositif (238c) comprend ledit élément formant tige de piston (238c).

37. Organe formant colonne selon l'une quelconque des revendications 29 à 36, caractérisé en ce que ledit organe formant deuxième composant du dispositif (114a) est guidé par rapport audit tube de base (110) par un moyen de guidage (122), ledit moyen de guidage (122) pouvant se déplacer dans le sens axial par rapport audit tube de base (110) et par rapport audit organe formant deuxième composant du dispositif (114a), de manière à être déplacé vers l'extérieur dudit tube de base (110), lorsque ledit organe formant deuxième composant du dispositif (114a) est déplacé vers l'extérieur par rapport à ladite deuxième extrémité du tube de base (110b) et de manière à être déplacé vers l'intérieur dudit tube de base (110), lorsque ledit organe formant deuxième composant du dispositif (114a) est déplacé vers l'intérieur par rapport à ladite deuxième extrémité du tube de base (110b).

38. Organe formant colonne selon la revendication 37, caractérisé en ce que le déplacement axial dudit moyen de guidage (122) est commandé en réponse au déplacement axial relatif desdits organes formant premier et deuxième composants du dispositif (114c, 114a) par des moyens formant palans (132).

39. Organe formant colonne selon la revendication 37 ou 38, caractérisé en ce que le moyen de guidage (122) est combiné en vue de son déplacement axial commun avec ledit moyen formant support (112).

Fig.1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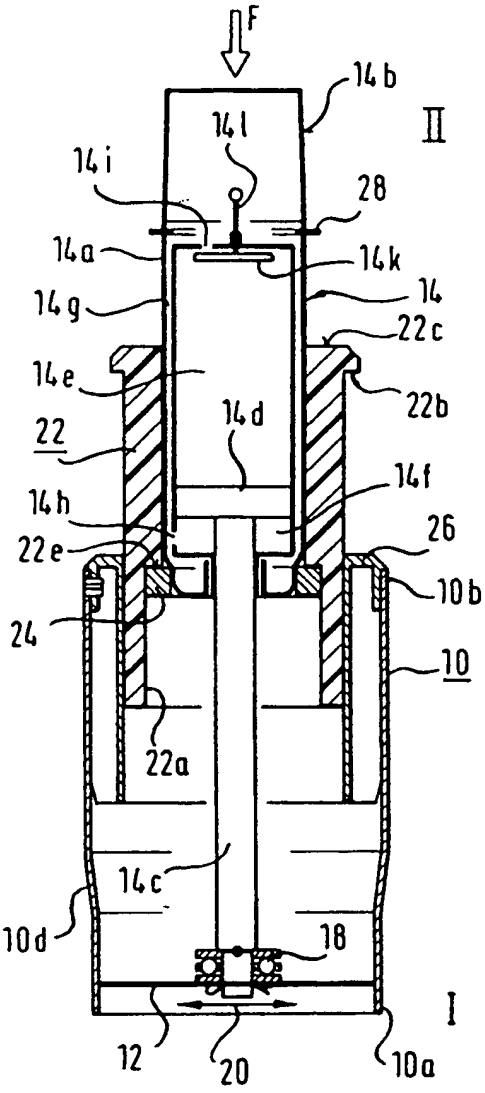
16
14b
22c
28
22b
26
10b
10
22
14
22e
14a
22a
10d
24
18
14c
20
12
10a
A

Fig.2


F
14b
II
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14i
28
14a
14k
14
14g
22c
14e
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22
14f
14h
26
22e
10b
24
10
22a
14c
10d
18
I
12
20
10a